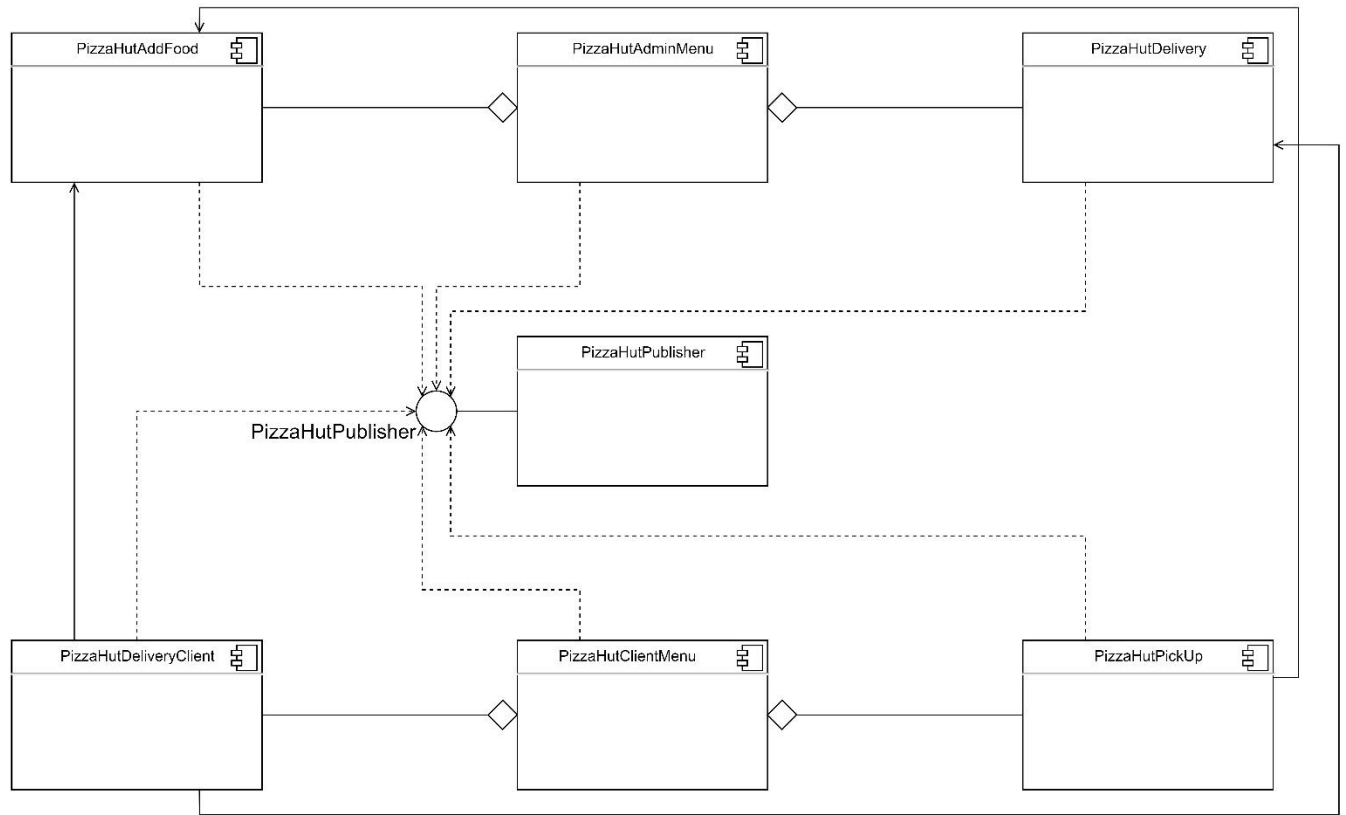


## High-Level Diagram



## Manifest implementation

Bundle Name – PizzaHutAddFood

Imported services

- pizzahutclientpublisher

Exported services

- pizzahutaddfood

Bundle Name – PizzaHutDelivery

Imported services

- pizzahutclientpublisher

Exported services

- pizzahutdelivery

Bundle Name – PizzaHutDeliveryClient

Imported services

- pizzahutaddfood
- pizzahutclientpublisher
- pizzahutdelivery

Exported services

- pizzahutdeliveryclient

Bundle Name - PizzaHutPickup

Imported services

- pizzahutaddfood
- pizzahutclientpublisher

Exported services

- pizzahutpickup

Bundle Name - PizzaHutPublisher

Exported services

- Pizzahutclientpublisher

Bundle Name - PizzaHutAdminMenu

Imported services

- pizzahutclientpublisher

Exported services

- pizzahutadminmenu

Require Bundle

- PizzaHutDelivery
- PizzaHutAddFood

Bundle Name - PizzaHutClientMenu

Imported services

- pizzahutadminmenu
- pizzahutclientpublisher

Require Bundle

- PizzaHutDeliveryClient
- PizzaHutPickup

## Installation and Explanation

Publishers – PizzaHutPublisher

Subscribers – PizzaHutAddFood, PizzaHutDelivery, PizzaHutDeliveryClient, PizzaHutPickup, PizzaHutAdminMenu, PizzaHutClientMenu

PizzaHutPublisher – Publisher of the project also contains shareable method and properties

PizzaHutAdminMenu – Main menu of Admin. This will start the relevant subscriber admin wants

PizzaHutClientMenu – Main menu of the client. This will start the relevant subscriber client wants.

PizzaHutAddFood – to add food to the system

PizzaHutDelivery – add delivery persons to the system

PizzaHutDeliveryClient – The delivery process of the client-side. This can be used to add home delivery order.

PizzaHutPickup – Pickup Section of client-side. This can be used to add a pick-up order.

First of all, run all related project then set auto start as false. After starting of all project type 'SS' to get bundle list find project Publisher named as PizzaHutPublisher and start using 'Start <bundle-number>' then we want to add Pizza and Delivery Person to system. To that find PizzaHutAdminMenu start it. Then it will start a menu. Choose the bundle that needs. After hit enter, it will automatically activate the service that chosen.

If you choose PizzaHutAddFood, it will automatically start that. It will ask 'How many food items do you want to add' give input and add food name and price. Those data will save to ArrayList and also that will store to HashMap called 'pizzaList' in publisher class with index number to that food.

If you Choose PizzaHutDelivery, it will automatically start that. It will ask 'How many Delivery Person you want to add' give input and add delivery person name. Those data will store in ArrayList called 'delivery' in publisher class.

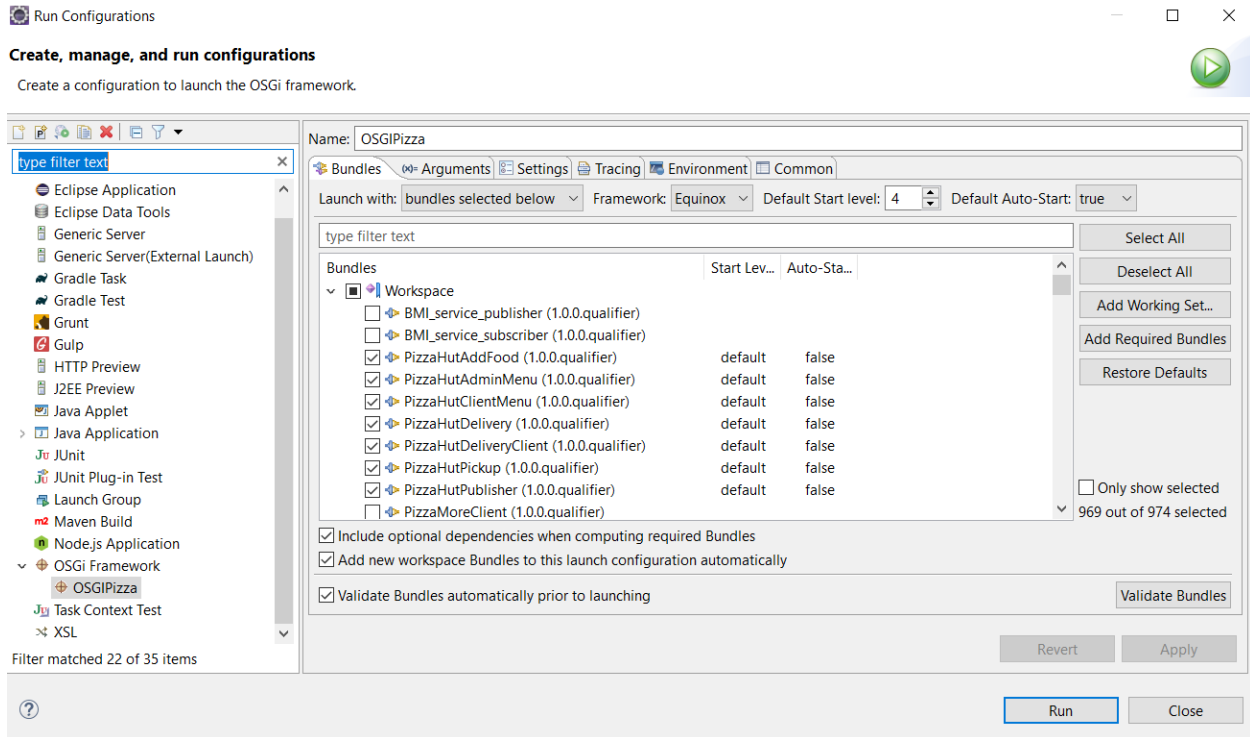
After all those steps, the client can use the system. Find `PizzaHutClientMenu` and start that. Then it will start a menu. Choose the bundle that needs. After hit enter, it will automatically activate the service that chooses.

If you choose `PizzaHutDeliveryClient`, it will automatically start that bundle. It will ask the client address. Then it automatically retrieves `pizzaList` from publisher class. Enter 'Enter Food Number' and quantity much as you need. Hit 0 when done then it will give a bill that contains pizza name quantity price and total price. Also, the delivery person name. That delivery person will generate randomly.

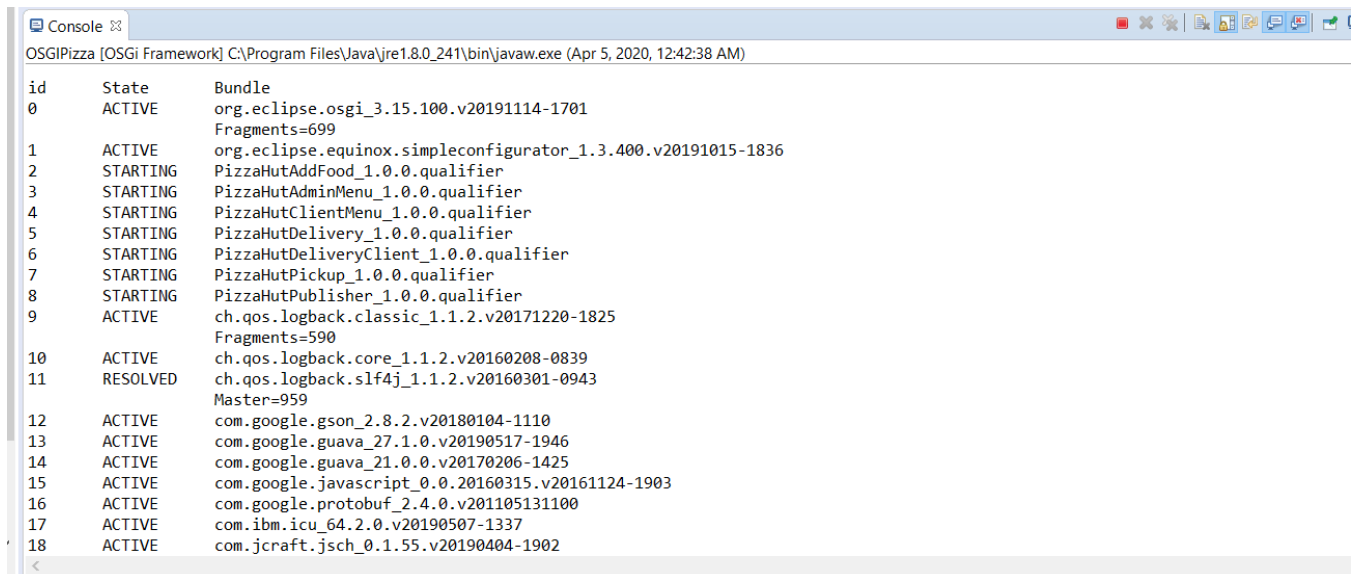
If you choose `PizzaHutPickup`, it will automatically start that bundle. It will ask pick-up time. Then it automatically retrieves `pizzaList` from publisher class. Enter 'Enter Food Number' and quantity much as you need. Hit 0 when done then it will give a bill that contains pizza name quantity price and total price.

## Screenshots

### Start of all publishers and Subscriber



All are running as 'STARTING'. All the names Starting with 'PizzaHut'. Bundle id- 2, 3, 4, 5, 6, 7, 8



## Starting of Publisher

```
Console [OSGi Framework] C:\Program Files\Java\jre1.8.0_241\bin\javaw.exe (Apr 5, 2020, 12:42:38 AM)
952 ACTIVE org.objectweb.asm_7.0.0.v20181030-2244
953 ACTIVE org.objectweb.asm.commons_7.0.0.v20181030-2244
954 ACTIVE org.objectweb.asm.tree_7.2.0.v20191010-1910
955 ACTIVE org.objectweb.asm.tree_7.0.0.v20181030-2244
956 ACTIVE org.opentest4j_1.2.0.v20190826-0900
957 ACTIVE org.sat4j.core_2.3.5.v201308161310
958 ACTIVE org.sat4j.pb_2.3.5.v201404071733
959 ACTIVE org.slf4j.api_1.7.10.v20170428-1633
    Fragments=11
960 ACTIVE org.slf4j.api_1.7.2.v20121108-1250
    Fragments=961
961 RESOLVED org.slf4j.impl.log4j12_1.7.2.v20131105-2200
    Master=960
962 ACTIVE org.sonatype.m2e.mavenarchiver_0.17.4.201905300046
963 ACTIVE org.tukaani.xz_1.8.0.v20180207-1613
964 ACTIVE org.uddi4j_2.0.5.v200805270300
965 ACTIVE org.w3c.css.sac_1.3.1.v200903091627
966 ACTIVE org.w3c.dom.events_3.0.0.draft20060413_v201105210656
967 ACTIVE org.w3c.dom.smil_1.0.1.v200903091627
968 ACTIVE org.w3c.dom.svg_1.1.0.v201011041433
osgi> start 8
Pizza Hut Publisher Started
osgi>
```

## Starting of PizzaHutAdminMenu

```
Console [OSGi Framework] C:\Program Files\Java\jre1.8.0_241\bin\javaw.exe (Apr 5, 2020, 12:42:38 AM)
958 ACTIVE org.sat4j.pb_2.3.5.v201404071733
959 ACTIVE org.slf4j.api_1.7.10.v20170428-1633
    Fragments=11
960 ACTIVE org.slf4j.api_1.7.2.v20121108-1250
    Fragments=961
961 RESOLVED org.slf4j.impl.log4j12_1.7.2.v20131105-2200
    Master=960
962 ACTIVE org.sonatype.m2e.mavenarchiver_0.17.4.201905300046
963 ACTIVE org.tukaani.xz_1.8.0.v20180207-1613
964 ACTIVE org.uddi4j_2.0.5.v200805270300
965 ACTIVE org.w3c.css.sac_1.3.1.v200903091627
966 ACTIVE org.w3c.dom.events_3.0.0.draft20060413_v201105210656
967 ACTIVE org.w3c.dom.smil_1.0.1.v200903091627
968 ACTIVE org.w3c.dom.svg_1.1.0.v201011041433
osgi> start 8
Pizza Hut Publisher Started
osgi> start 3
Pizza Hut Admin Menu Start
Welcome to Pizza Hut Admin Menu
Choose Service that you need
01. Add Food
02. Add Delivery Person
Enter Option Number:
```

## After Choose 1. Automatic Starting of PizzaHutAddFood

```
Console [OSGi Framework] C:\Program Files\Java\jre1.8.0_241\bin\javaw.exe (Apr 5, 2020, 12:42:38 AM)
958  ACTIVE      org.sat4j.pb_2.3.5.v201404071733
959  ACTIVE      org.slf4j.api_1.7.10.v20170428-1633
960  ACTIVE      org.slf4j.api_1.7.2.v20121108-1250
961  RESOLVED    org.slf4j.impl.log4j12_1.7.2.v20131105-2200
962  ACTIVE      org.sonatype.m2e.mavenarchiver_0.17.4.201905300046
963  ACTIVE      org.tukaani.xz_1.8.0.v20180207-1613
964  ACTIVE      org.uddi4j_2.0.5.v200805270300
965  ACTIVE      org.w3c.css.sac_1.3.1.v200903091627
966  ACTIVE      org.w3c.dom.events_3.0.0.draft20060413_v201105210656
967  ACTIVE      org.w3c.dom.smil_1.0.1.v200903091627
968  ACTIVE      org.w3c.dom.svg_1.1.0.v201011041433
osgi> start 8
Pizza Hut Publisher Started
osgi> start 3
Pizza Hut Admin Menu Start
Welcome to Pizza Hut Admin Menu
Choose Service that you need
01. Add Food
02. Add Delivery Person
Enter Option Number:
```

## Details adding of Pizza

```
Console [OSGi Framework] C:\Program Files\Java\jre1.8.0_241\bin\javaw.exe (Apr 5, 2020, 12:42:38 AM)
963  ACTIVE      org.tukaani.xz_1.8.0.v20180207-1613
964  ACTIVE      org.uddi4j_2.0.5.v200805270300
965  ACTIVE      org.w3c.css.sac_1.3.1.v200903091627
966  ACTIVE      org.w3c.dom.events_3.0.0.draft20060413_v201105210656
967  ACTIVE      org.w3c.dom.smil_1.0.1.v200903091627
968  ACTIVE      org.w3c.dom.svg_1.1.0.v201011041433
osgi> start 8
Pizza Hut Publisher Started
osgi> start 3
Pizza Hut Admin Menu Start
Welcome to Pizza Hut Admin Menu
Choose Service that you need
01. Add Food
02. Add Delivery Person
Enter Option Number: 1
How many food items do you want to add : 3
Enter Food Name : Sausage Pizza
Enter food Price : 1500
Enter Food Name : Cheese Pizza
Enter food Price : 1200
Enter Food Name : Chicken Pizza
Enter food Price : 1600
bsgi>
```



## After Choose 2. Automatic Starting of PizzaHutDelivery

```
Console [OSGi Framework] C:\Program Files\Java\jre1.8.0_241\bin\javaw.exe (Apr 5, 2020, 12:42:38 AM)
Pizza Hut Admin Menu Start
Welcome to Pizza Hut Admin Menu
Choose Service that you need
01. Add Food
02. Add Delivery Person
Enter Option Number: 1
How many food items do you want to add : 3
Enter Food Name : Sausage Pizza
Enter food Price : 1500
Enter Food Name : Cheese Pizza
Enter food Price : 1200
Enter Food Name : Chicken Pizza
Enter food Price : 1600
osgi> stop 3
Pizza Hut Admin Menu Stop
osgi> start 3
Pizza Hut Admin Menu Start
Welcome to Pizza Hut Admin Menu
Choose Service that you need
01. Add Food
02. Add Delivery Person
Enter Option Number: 2
How many Delivery Person you want to add :
```

## Details Adding of Delivery Person

```
Console [OSGi Framework] C:\Program Files\Java\jre1.8.0_241\bin\javaw.exe (Apr 5, 2020, 12:42:38 AM)
01. Add Food
02. Add Delivery Person
Enter Option Number: 1
How many food items do you want to add : 3
Enter Food Name : Sausage Pizza
Enter food Price : 1500
Enter Food Name : Cheese Pizza
Enter food Price : 1200
Enter Food Name : Chicken Pizza
Enter food Price : 1600
osgi> stop 3
Pizza Hut Admin Menu Stop
osgi> start 3
Pizza Hut Admin Menu Start
Welcome to Pizza Hut Admin Menu
Choose Service that you need
01. Add Food
02. Add Delivery Person
Enter Option Number: 2
How many Delivery Person you want to add : 2
Enter Delivery Person Name: Saman Kumara
Enter Delivery Person Name: Supun Sankalpa
bsgi>
```

## Starting of PizzaHutClientMenu

```
Console [OSGi Framework] C:\Program Files\Java\jre1.8.0_241\bin\javaw.exe (Apr 5, 2020, 12:42:38 AM)
Enter food Price : 1200
Enter Food Name : Chicken Pizza
Enter food Price : 1600
osgi> stop 3
Pizza Hut Admin Menu Stop
osgi> start 3
Pizza Hut Admin Menu Start
Welcome to Pizza Hut Admin Menu
Choose Service that you need
01. Add Food
02. Add Delivery Person
Enter Option Number: 2
How many Delivery Person you want to add : 2
Enter Delivery Person Name: Saman Kumara
Enter Delivery Person Name: Supun Sankalpa
osgi> start 4
Pizza Hut Client Menu Start
Pizza Hut Publisher
Welcome to Pizza Hut Client Menu
Choose Service that you need
01. Delivery
02. Pickup or Dinnin
Enter Option Number: :
```

## After Choose 1. Automatic Starting of PizzaHutDeliveryClient

```
Console [OSGi Framework] C:\Program Files\Java\jre1.8.0_241\bin\javaw.exe (Apr 5, 2020, 12:42:38 AM)
Enter food Price : 1600
osgi> stop 3
Pizza Hut Admin Menu Stop
osgi> start 3
Pizza Hut Admin Menu Start
Welcome to Pizza Hut Admin Menu
Choose Service that you need
01. Add Food
02. Add Delivery Person
Enter Option Number: 2
How many Delivery Person you want to add : 2
Enter Delivery Person Name: Saman Kumara
Enter Delivery Person Name: Supun Sankalpa
osgi> start 4
Pizza Hut Client Menu Start
Pizza Hut Publisher
Welcome to Pizza Hut Client Menu
Choose Service that you need
01. Delivery
02. Pickup or Dinnin
Enter Option Number: : 1
Welcome to delivery Service
Enter Address :
```

## Ordering Pizza as Delivery Order and Output

```
OSGIPizza [OSGi Framework] C:\Program Files\Java\jre1.8.0_241\bin\javaw.exe (Apr 5, 2020, 12:42:38 AM)
osgi> start 4
Pizza Hut Client Menu Start
Pizza Hut Publisher
Welcome to Pizza Hut Client Menu
Choose Service that you need
01. Delivery
02. Pickup or Dinnin
Enter Option Number: : 1
Welcome to delivery Service
Enter Address : Udesha Kothalawala Kaduwela
1 Pizza Name: Sausage Pizza      Price: 1500
2 Pizza Name: Cheese Pizza      Price: 1200
3 Pizza Name: Chicken Pizza     Price: 1600
Enter Food Number(Enter 0 to stop): 1
Enter Quantity: 2
Enter Food Number(Enter 0 to stop): 3
Enter Quantity: 4
Enter Food Number(Enter 0 to stop): 0
1. Sausage Pizza      *      2      =      3000
2. Chicken Pizza     *      4      =      6400
Total Price: 9400
Delivery Person Name : Saman Kumara
osgi>
```

## After Choose 2. Automatic Starting of PizzaHutPickup

```
OSGIPizza [OSGi Framework] C:\Program Files\Java\jre1.8.0_241\bin\javaw.exe (Apr 5, 2020, 12:42:38 AM)
2 Pizza Name: Cheese Pizza      Price: 1200
3 Pizza Name: Chicken Pizza     Price: 1600
Enter Food Number(Enter 0 to stop): 1
Enter Quantity: 2
Enter Food Number(Enter 0 to stop): 3
Enter Quantity: 4
Enter Food Number(Enter 0 to stop): 0
1. Sausage Pizza      *      2      =      3000
2. Chicken Pizza     *      4      =      6400
Total Price: 9400
Delivery Person Name : Saman Kumara
osgi> stop 4
Pizza Hut Client Menu Stop
osgi> start 4
Pizza Hut Client Menu Start
Pizza Hut Publisher
Welcome to Pizza Hut Client Menu
Choose Service that you need
01. Delivery
02. Pickup or Dinnin
Enter Option Number: : 2
Welcome to Pickup Service
Enter Pickup Time :
```

## Order Pizza as Pick-Up Order and output

```
OSGiPizza [OSGi Framework] C:\Program Files\Java\jre1.8.0_241\bin\javaw.exe (Apr 5, 2020, 12:42:38 AM)
Total Price: 9400
Delivery Person Name : Saman Kumara
osgi> stop 4
Pizza Hut Client Menu Stop
osgi> start 4
Pizza Hut Client Menu Start
Pizza Hut Publisher
Welcome to Pizza Hut Client Menu
Choose Service that you need
01. Delivery
02. Pickup or Dinnin
Enter Option Number: : 2
Welcome to Pickup Service
Enter Pickup Time : 14:45
1 Pizza Name: Sausage Pizza      Price: 1500
2 Pizza Name: Cheese Pizza      Price: 1200
3 Pizza Name: Chicken Pizza     Price: 1600
Enter Food Number(Enter 0 to stop): 3
Enter Quantity: 4
Enter Food Number(Enter 0 to stop): 0
1. Chicken Pizza      *      4      =      6400
Total Price: 6400
osgi>
```

We can see that we only start 2 subscribers and 1 publisher but all are automatically activated.  
Bundle Id – 2, 3, 4, 5, 6, 7, 8

```
OSGiPizza [OSGi Framework] C:\Program Files\Java\jre1.8.0_241\bin\javaw.exe (Apr 5, 2020, 12:42:38 AM)

id      State      Bundle
0       ACTIVE    org.eclipse.osgi_3.15.100.v20191114-1701
        Fragments=699
1       ACTIVE    org.eclipse.equinox.simpleconfigurator_1.3.400.v20191015-1836
2       ACTIVE    PizzaHutAddFood_1.0.0.qualifier
3       ACTIVE    PizzaHutAdminMenu_1.0.0.qualifier
4       ACTIVE    PizzaHutClientMenu_1.0.0.qualifier
5       ACTIVE    PizzaHutDelivery_1.0.0.qualifier
6       ACTIVE    PizzaHutDeliveryClient_1.0.0.qualifier
7       ACTIVE    PizzaHutPickup_1.0.0.qualifier
8       ACTIVE    PizzaHutPublisher_1.0.0.qualifier
9       ACTIVE    ch.qos.logback.classic_1.1.2.v20171220-1825
        Fragments=590
10      ACTIVE    ch.qos.logback.core_1.1.2.v20160208-0839
11      RESOLVED  ch.qos.logback.slf4j_1.1.2.v20160301-0943
        Master=959
12      ACTIVE    com.google.gson_2.8.2.v20180104-1110
13      ACTIVE    com.google.guava_27.1.0.v20190517-1946
14      ACTIVE    com.google.guava_21.0.0.v20170206-1425
15      ACTIVE    com.google.javascript_0.0.20160315.v20161124-1903
16      ACTIVE    com.google.protobuf_2.4.0.v201105131100
17      ACTIVE    com.ibm.icu_64.2.0.v20190507-1337
18      ACTIVE    com.jcraft.jsch_0.1.55.v20190404-1902
```